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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,503	10/03/2003	Chien-Chih Huang	ACMP0120USA	2502

27765 7590 02/01/2005

NORTH AMERICA INTERNATIONAL PATENT OFFICE (NAIPC)
P.O. BOX 506
MERRIFIELD, VA 22116

EXAMINER	
STEPHENS, JUANITA DIONNE	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 02/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H-A

Offic Action Summary	Application No.	Applicant(s)	
	10/605,503	HUANG ET AL.	
	Examiner	Art Unit	
	Juanita D. Stephens	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Application filed 10/3/03*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-13 and 15-18* is/are rejected.

7)☒ Claim(s) *5 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "nozzles", "substrate", and "plurality of heater" recited in claim 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

In paragraph [0007], line 10 the word "ink" is misspelled.

In paragraph [0008], line 3 the word "ink" is misspelled.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 6-13, and 15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kneezel et al. (US 5,107,276).

Kneezel et al. discloses a method for heating a printhead and a printing apparatus (Fig. 3) comprising: **1)** a printhead (10) (col 4, ln 23; Figs. 1 and 2) for ejecting ink from a plurality of set of nozzles (27) (col 4, ln 24), **2)** a substrate (heating element plate 28) (col 4, lns 26-27), **3)** a plurality of heaters (heating elements 34) (col 4, ln 28) arranged on the substrate for heating ink in the printhead to generate bubbles in the ink and eject the ink through corresponding nozzles, **4)** a data transducer (indicated on Fig. 5a as "data to be printed") for translating raw data into printing data (col 9, lns 58-61), **5)** a counter (pulse counter 61) for counting a total quantity of printing data value sent to each set of nozzles (col 8, lns 22-30), **6)** a memory (look up table 51) for storing the total quantity of printing data value corresponding to each set of nozzles (col 8, lns 22-30; col 10, lns 6-12; col 10, lns 41-47), **7)** a head driver circuit (control circuitry 48) for generating printing signal (ejection pulse controller 62) (col 9, lns 66-67)

and non-printing signals (subthreshold pulse width controller 56) (col 8, lns 25-30) corresponding to each set of nozzles according to the printing data provided by the data transducer and the total quantity of printing data value stored in the memory, the printing signals controlling the heaters (34) to generate sufficient heat energy to eject ink from the nozzles for printing data (col 11, lns 51-67), and the non-printing signal controlling the heaters to generate heat energy that is not sufficient to eject ink from the nozzles for raising a temperature of the ink (col 10, lns 18-22; col 11, lns 51-67), **8)** wherein each set of nozzles consists of a single nozzle (27), **9)** wherein each set of nozzles consists of a plurality nozzles (20),

10) wherein the plurality of nozzles in each set of nozzles are located adjacent to each other (as seen in Fig. 1), **11)** wherein the total quantity of printing data value corresponding to each set of nozzles is kept constant for each printing signal sent to the set of nozzles if the total quantity of printing data value is greater than a predetermined threshold value (col 8, lns 6-11; col 9, ln 67-col 10, ln 22), **12)** wherein the counter decreases the total quantity of printing data value corresponding to each set of nozzles for each non-printing signal sent to the set of nozzles (col 9, lns 51-53), and **13)** wherein the total quantity of printing data value corresponding to each set of nozzles is reset if no printing signal is sent to the set of nozzles during a predetermined period of time (col 9, ln 67-col 10, ln 7; col 10, lns 36-48). Kneezel et al. inherently teaches wherein the counter increases the total quantity of printing data value corresponding to each set of nozzles for each printing signal sent to the set of nozzles because the counter counts every time the droplet ejection pulses are sent to the heating elements during the print

cycle. Kneezel et al. further discloses the method of claims 10-13, and 15-18 as discussed above with respect to the apparatus claims 1-4, and 6-9.

Allowable Subject Matter

5. Claims 5 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teaches, suggest, or render obvious the combination of wherein the head driver circuit comprises a signal generator for generating a plurality of printing signals and non-printing signals having unique energy values, a comparator for comparing the total quantity of printing data value stored in the memory with a plurality of reference values, and a selector circuit for selecting printing and non-printing signal generated by the signal generator to be sent to the corresponding set of nozzles based on the comparison results given by the comparator, recited in claim 5. This invention solves the problem of reducing the range of drop volume variation, while improving the quality of printed text, graphics and images, and maintaining a temperature of the printhead.

The prior art does not teaches, suggest, or render obvious the combination of generating a plurality of printing signals and non-printing signals having unique energy values, comparing the total quantity of printing data value stored in the memory with a plurality of reference values, and selecting printing and non-printing signal to be sent to

the corresponding set of nozzles based on the comparison results, recited in claim 14. This invention solves the problem of reducing the range of drop volume variation, while improving the quality of printed text, graphics and images, and maintaining a temperature of the printhead.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juanita D. Stephens whose telephone number is (571) 272-2153. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juanita D. Stephens
Primary Examiner
Art Unit 2853

January 28, 2005